McDONNELL Aircraft Corporation

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To: Bureau of Navy Weapons
Department of the Navy
Washington 25, D. C.

Attention: PID-222
RMMP-23
DLI-3
RRMA-22

Via: BWR, St. Louis

Subject: Molybdenum Structural Component Program.
Contract No. NOw 61-0653-t
Task Order No. 61-2

Enclosure: (1) Interim Report for the period 1 May [redacted] 1 Aug [redacted] 1963,

1. Enclosure (1) Interim Report is forwarded for information in accordance with the terms of the subject contract.

MCDONNELL AIRCRAFT CORPORATION

R. H. Hepper
R. H. Hepper
Project Engineer
Space and Missile Systems
Engineering Division

REJ:ms

CC: Lewis Research Center, w/encl.
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MCDONNELL AIRCRAFT CORPORATION

Molybdenum Structural Component Program

Contract No.: NOw 61-0653-t
Task Order No.: 61-2

Progress Report
Covering Period

1 May 1963 to 1 August 1963

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1. Introduction. - This report covers the progress during the period between 1 May 1963 and 1 August 1963. A new schedule for delivery of TZM molybdenum to M.A.C. has been received from Universal Cyclops. The design and analysis of the curved and compound curved leading edge test components were completed. Preliminary results of electron beam welded molybdenum corrugated panels on a company funded program are also reported.

2. Material Delivery. - The following anticipated shipping dates were obtained from Universal Cyclops in a letter dated 24 June 1963.

Gauge	TZM Sheet to be Shipped				Total No. Sheet	Sheet Size (In.)
	Shipping Date					
	25 Aug.	1 Sept.	8 Sept.	15 Sept.		
.060	6	4			10	24 x 72
.040			4		4	24 x 72
.020			8	19	27	24 x 60
.016	8	12	13		33	18 x 60

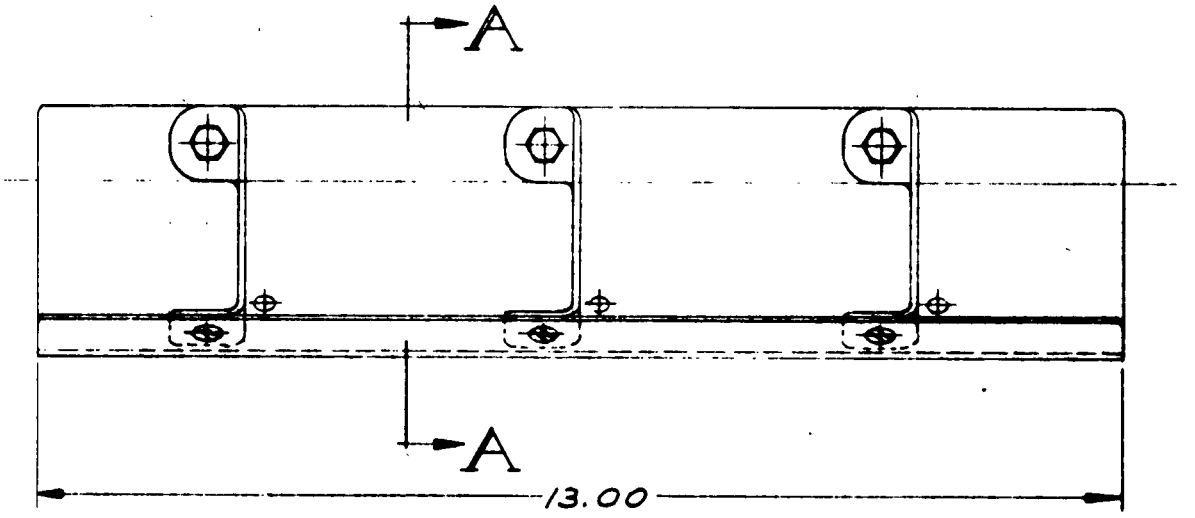
3. Leading Edge Test Specimens. - Singles and compound curvature leading edge test specimens have been designed and analyzed. The same flight trajectory as reported previously in the design of the control surface is used. The critical condition of 1.05 psi collapse pressure at 3000°F occurs during re-entry glide. Figure 1 illustrates one of the leading edge configurations.

4. Electron Beam Welded Corrugated Panels. - A M.A.C. funded program has been initiated to investigate the feasibility of Electron Beam welding molybdenum corrugated panels and then coating these panels. To date two panels have been successfully welded by Hamilton-Standard using their Hamilton-Zeiss equipment. One of these panels was coated with the M.A.C. L-7 process and the other panel was broken while being coated by a vendor. The M.A.C. coated panel successfully

passed an oxidation test at 2500°F for one hour. This panel was then loaded in bending to failure. A shear flow of 183 lb./in. was developed in the weld before the corrugation failed in tension. Additional panels are being prepared for other tests.

5. Milestone Chart. - The revised milestone chart shown in Figure 2 reflects the new material delivery dates.

MOLYBOENUM LEADING EDGE



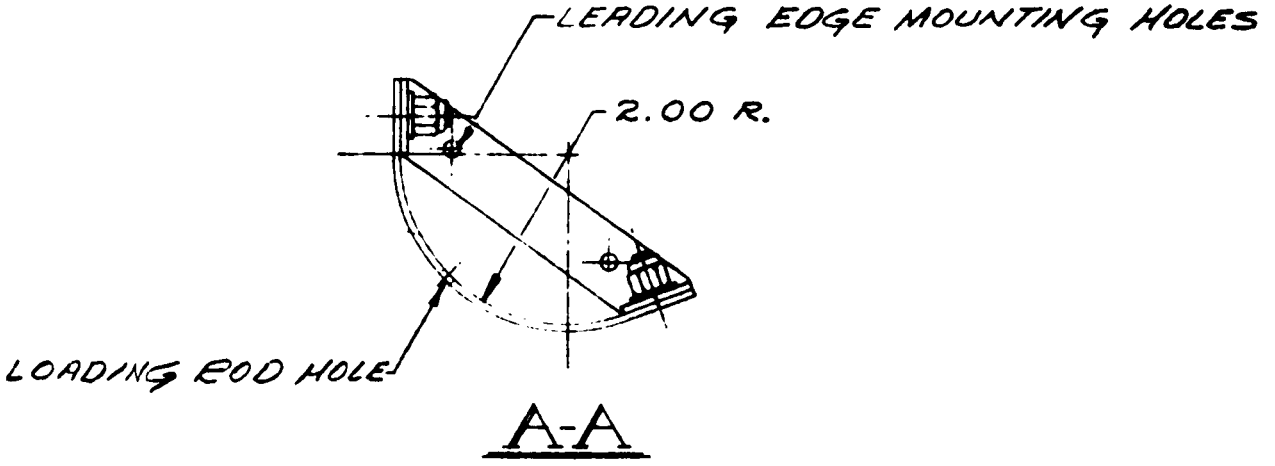


FIGURE 1

MILESTONE CHART

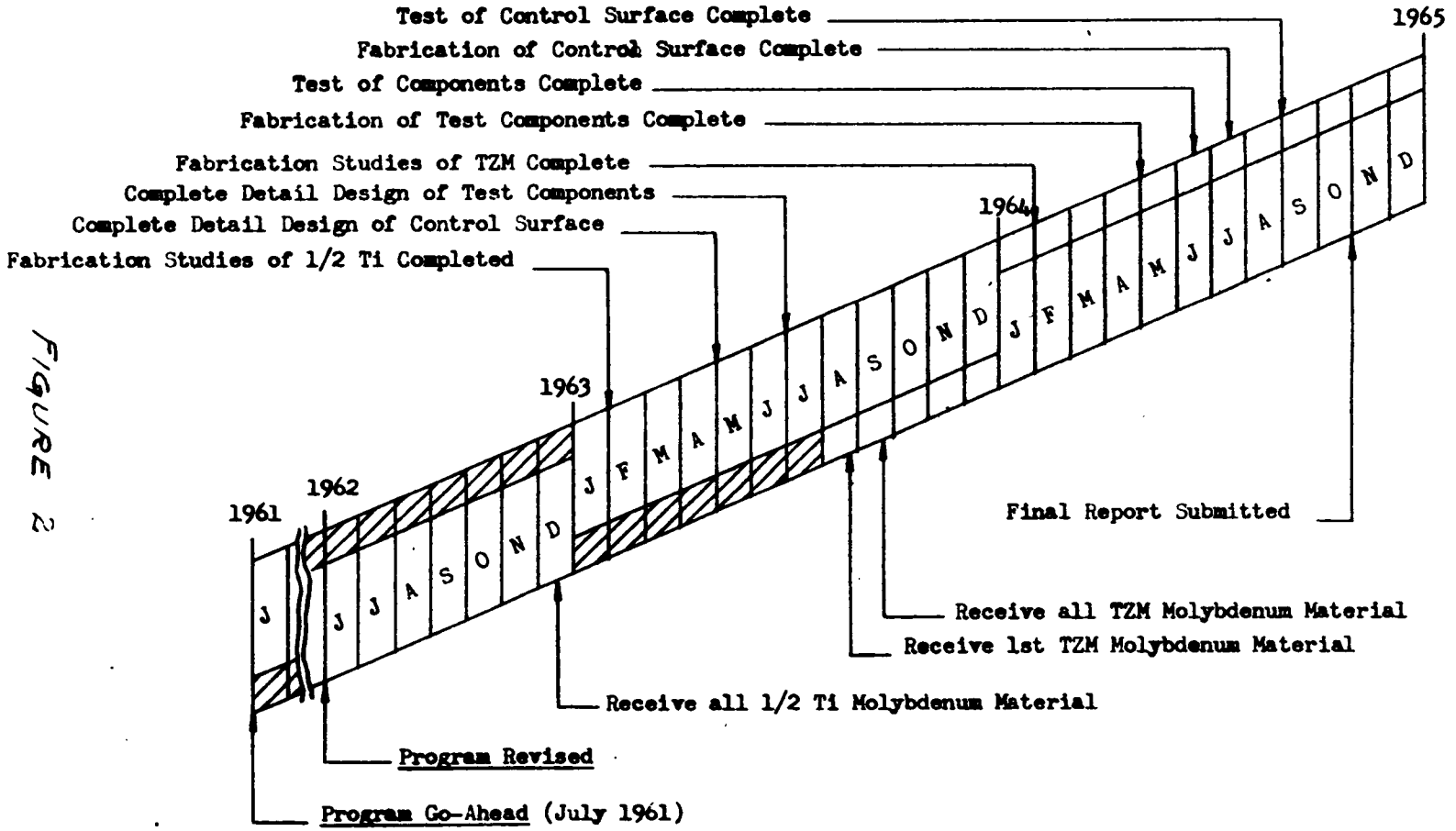


FIGURE 2